

## PULSE OXIMETER WITH PARALLEL SATURATION CALCULATION MODULES

### ABSTRACT OF THE DISCLOSURE

5           A method and apparatus for reducing the effects of noise on a system for  
measuring physiological parameters, such as, for example, a pulse oximeter. The  
method and apparatus of the invention take into account the physical limitations on  
various physiological parameters being monitored when weighting and averaging a series  
of measurements. Varying weights are assigned different measurements, measurements  
10   are rejected, and the averaging period is adjusted according to the reliability of the  
measurements. Similarly, calculated values derived from analyzing the measurements  
are also assigned varying weights and averaged over adjustable periods. More  
specifically, a general class of filters such as, for example, Kalman filters, is employed  
in processing the measurements and calculated values. The filters use mathematical  
15   models which describe how the physiological parameters change in time, and how these  
parameters relate to measurement in a noisy environment. The filters adaptively modify  
a set of averaging weights to optimally estimate the physiological parameters.